AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (original): A time-division synchronous wireless modem device provided at each of a plurality of wireless stations in a wireless system which transmits and receives communication packets containing a header between the individual wireless stations via one wireless channel by using, on a one-by-one basis, any of communication slots obtained through time division of a predetermined transmission cycle period by a predetermined unit transmission time, the time-division synchronous wireless modem device being characterized by comprising:

a modem unit which transmits and receives the communication packets;

a communication state determination unit which obtains a transmission cycle period and the total number of wireless stations in use each contained in a header of the received communication packet; and

a transmission timing controller which selectively determines an arbitrary one of the communication slots in a next transmission cycle period when the communication packet is not received during the entire span of the one transmission cycle period, or selectively determines the one of the communication slots to be used by estimating a vacant one of the communication slots in the next transmission cycle period from the transmission cycle period and the total number of wireless stations in use each obtained by the communication state determination unit when the communication packet is received.

2. (currently amended): A time-division synchronous wireless modem device according to claim 1, characterized in that:

at least one reduced transmission cycle period composed of an integral fraction of the transmission cycle period is predetermined to allow transmission and reception to be performed based on either of the transmission cycle period and the reduced transmission cycle period; and

the transmission timing controller selects one of the transmission cycle period and the reduced cycle period, and selectively determines an arbitrary one of the communication slots in the next selected transmission cycle period or reduced cycle period when the communication packet is not received during the entire span of the selected transmission cycle period or reduced cycle period, or selectively determines the one of the communication slots to be used by estimating a vacant one of the communication slots in the next selected transmission cycle period or reduced cycle period from the transmission cycle period and the total number of wireless stations in use each obtained by the communication state ~~judging~~ determining unit when the communication packet is received.

3. (original): A time-division synchronous wireless modem device according to claim 2, characterized by comprising a display unit which displays the transmission cycle period, the reduced cycle period, and the communication slot in use.

4. (previously presented): A time-division synchronous wireless modem device according to claim 2, characterized in that the transmission timing controller selectively determines the one of the communication slots to be used in the next transmission cycle period or in the next reduced cycle period based on information inputted from an outside.

5. (previously presented): A time-division synchronous wireless modem device according to claim 2, characterized in that the transmission timing controller selectively determines the one of the communication slots to be used in the next transmission cycle period or in the next reduced cycle period in accordance with a rule predetermined based on the selected transmission cycle period or reduced cycle period and the received communication slot.

6. (previously presented): A time-division synchronous wireless modem device according to claim 1, characterized in that the transmission timing controller determines, after the transmission, whether or not transmission therefrom has been performed normally from information on the total number of wireless stations contained in the header of the communication packet transmitted from another wireless station.

7. (previously presented): A time-division synchronous wireless modem device according to claim 1, characterized by comprising an information processing unit for dividing large-capacity information which cannot be transmitted by using one of the communication slots into data trains each transmittable by using one of the communication slots, and characterized in that the transmission timing controller controls a transmission timing to allow each of the data trains to be transmitted by using a vacant one of the communication slots.

8. (original): A time-division synchronous wireless modem device according to claim 7, characterized in that the information processing unit checks the presence or absence of

abnormality in any of the received data trains and requests retransmission when the abnormality is found or requests re-synthesis of the data trains when the abnormality is not found.

9. (previously presented): A time-division synchronous wireless modem device according to claim 1, characterized in that the transmission timing controller controls a transmission timing such that, based on a request to transmit non-periodic continuous information inputted from an outside, the communication slot is used continuously for the non-periodic continuous information preferentially to another communication.

10. (original): A time-division synchronous wireless modem device according to claim 9, characterized in that the transmission timing controller resumes, after the transmission of the non-periodic continuous information is completed, the transmission of information transmitted on a per transmission-cycle-period basis that cannot be transmitted due to the transmission of the non-periodic continuous information.

11. (new): A time-division synchronous wireless modem device according to claim 1, wherein the transmission timing controller determines that the communication packet is not received during the entire span of the one transmission cycle period and selects the arbitrary one of the communication slots in the next transmission cycle period.

12. (new): A time-division synchronous wireless modem device according to claim 1, wherein the transmission timing controller determines that the communication packet is received during the entire span of the one transmission cycle period and selectively determines the one of

the communication slots to be used in the next transmission cycle period from the transmission cycle period and the total number of wireless stations in use received from the communication state determination unit.

13. (new): A time-division synchronous wireless device according to claim 1, wherein the modem unit transmits and receives the communication packets containing the header, between the individual wireless stations via one wireless channel by using, on a one-by-one basis, any of communication slots obtained through time division of a predetermined transmission cycle period.

14. (new): A time-division synchronous wireless device according to claim 1, wherein at least one of transmission cycle periods in which the communication packets are transmitted and received is a reduced transmission cycle period that is an integral fraction of the transmission cycle period.

15. (new): A time-division synchronous wireless device according to claim 1, wherein the wireless station is a terminal station that is positioned on an aircraft, a ship, or an automobile and performs short-wave wireless communication with a base station positioned on a ground and wherein the wireless station periodically communicates positional information and at least one of non-periodic large capacity non-continuous information and non-periodic continuous information.

16. (new): A method for transmitting and receiving communication packets in transmission cycle periods of a time division synchronous wireless system, the method comprising:

receiving by a wireless node at least one communication packet comprising a header from another wireless node via one wireless channel by using, on a one-by-one basis, one of communication slots obtained through time division of a predetermined transmission cycle period;

obtaining by the wireless node a transmission cycle period and total number of wireless nodes that are being used from the header of the respective received communication packet;

determining by the wireless node whether the communication packet is received in a current transmission cycle period;

if the communication packet is not received during entire span of the current transmission cycle period, selecting an arbitrary communication slot for the wireless node to transmit data in next transmission cycle period; and

if the communication packet is received in the current transmission cycle period, determining a vacant communication slot for the wireless node to transmit data in the next transmission cycle period,

wherein the vacant communication slot is determined based on the obtained transmission cycle period and the total number of wireless stations being used.

17. (new): The method according to claim 16, wherein the transmission cycle periods comprise at least one reduced transmission cycle period composed of an integral fraction of the

transmission cycle period is predetermined to allow transmission and reception to be performed based on either of the transmission cycle period and the reduced transmission cycle period; and

wherein the selection further comprises:

selecting one of the transmission cycle period and the reduced cycle period, and

selectively determining an arbitrary one of the communication slots in the next selected transmission cycle period or reduced cycle period when the communication packet is not received during the entire span of the selected transmission cycle period or reduced cycle period, or

selectively determining the one of the communication slots to be used by estimating a vacant one of the communication slots in the next selected transmission cycle period or reduced cycle period from the transmission cycle period and the total number of wireless stations being used.

18. (new): The method according to claim 16, wherein the transmission cycle periods comprise at least one reduced transmission cycle period composed of an integral fraction of the transmission cycle period and at least one short transmission cycle period are predetermined to allow transmission and reception to be performed based on either of the transmission cycle period, the reduced transmission cycle period, and the short transmission cycle.